

WHAT IS CLAIMED IS:

1. A video encoding method of subjecting an input video signal to motion compensation predictive encoding by using a reference picture signal representing at least one reference picture and a motion vector between the input video signal and the reference picture signal, comprising:

selecting one combination, for each block of the input video signal, from a plurality of combinations each including a predictive parameter and at least one reference picture number determined in advance for the reference picture;

generating a prediction picture signal in accordance with the reference picture number and predictive parameter of the selected combination;

generating a predictive error signal representing an error between the input video signal and the prediction picture signal; and

encoding the predictive error signal, information of the motion vector, and index information indicating the selected combination.

2. The video encoding method according to claim 1, wherein the predictive parameter includes information of a weighting factor and offset, and generating the prediction picture signal includes calculating a linear sum of a reference picture signal, indicated by the reference picture number included in

the selected combination, in accordance with the weighting factor, and then adding the offset to the linear sum.

3. The video encoding method according to
5 claim 2, wherein the weighting factor has a power of 2 as a denominator.

4. The video encoding method according to
claim 1, wherein the input video signal has a luminance
signal and two color difference signals, and the
10 predictive parameter is prepared for each of the
luminance signal and the two color difference signals.

5. The video encoding method according to
claim 1, wherein the input video signal is a picture
signal input for each frame of a progressive signal or
15 a picture signal input for each frame obtained by
merging two fields of an interlaced signal, and the
reference picture signal is a picture signal on a frame
basis.

6. The video encoding method according to
20 claim 1, wherein the input video signal is a picture
signal input for each field of an interlaced signal,
and the reference picture signal is a picture signal on
a field basis.

7. The video encoding method according to
25 claim 1, wherein the input video signal is a signal
including a picture signal input for each frame of a
progressive signal, a picture signal input for each

frame obtained by merging two fields of an interlaced signal, and a picture signal input for each field of an interlaced signal, the reference picture signal is a picture signal on a frame basis when the input video
5 signal is the picture signal input for each frame, and the reference picture signal is a picture signal on a field basis when the input video signal is the picture signal input for each field.

8. A video encoding method of subjecting an input
10 video signal to motion compensation predictive encoding by using a reference picture and a motion vector between the input video signal and the reference picture, comprising:

selecting one combination, for each block of the
15 input video signal, from a plurality of combinations of predictive parameters prepared in advance;

designating at least one reference picture number set to at least one reference picture;

generating a prediction picture signal in
20 accordance with a reference picture corresponding to the designated reference picture number and the predictive parameters of the selected combination;

generating a predictive error signal representing an error between the input video signal and the
25 prediction picture signal; and

encoding the predictive error signal, information of the motion vector, the designated reference picture

number, and index information indicating the selected combination.

9. The video encoding method according to claim 8, wherein the predictive parameter includes
5 information of a weighting factor and offset, and generating the prediction picture signal includes calculating a linear sum of a reference picture signal corresponding to the designated reference picture number in accordance with the weighting factor, and
10 then adding the offset to the linear sum.

10. The video encoding method according to claim 9, wherein the weighting factor has a power of 2 as a denominator.

11. A video decoding method comprising:
15 decoding encoded data including a predictive error signal representing an error in a prediction picture signal with respect to a video signal, motion vector information, and index information indicating a combination of at least one reference picture number and a predictive parameter;
20

generating a prediction picture signal in accordance with the reference picture number and predictive parameter of the combination indicated by the decoded index information; and

25 generating a reproduction video signal by using the predictive error signal and the prediction picture signal.

12. The video decoding method according to claim 11, wherein the predictive parameter includes information of a weighting factor and offset, and the step of generating the prediction picture signal
5 includes a process of calculating a linear sum of a reference picture signal indicated by the reference picture number included in the decoded index information in accordance with the weighting factor included in the index information, and then adding the
10 offset included in the index information to the linear sum.

13. A video decoding method comprising:
decoding encoded data including a predictive error
signal representing an error in a prediction picture
15 signal with respect to a video signal, motion vector information, and index information indicating a combination of a designated reference picture number and a predictive parameter;

generating a prediction picture signal in
20 accordance with the decoded reference picture number and the predictive parameter of the combination indicated by the decoded index information; and

generating a reproduction video signal by using the predictive error signal and the prediction picture
25 signal.

14. The video decoding method according to claim 13, wherein the predictive parameter includes

information of a weighting factor and offset, and
generating the prediction picture signal includes
calculating a linear sum of a reference picture signal,
indicated by the decoded reference picture number, in
5 accordance with the weighting factor included in the
index information, and then adding the offset included
in the index information to the linear sum.

15. The video decoding method according to
claim 14, wherein the weighting factor has a power of 2
10 as a denominator.

16. The video decoding method according to
claim 13, wherein the video signal is a picture signal
obtained for each frame of a progressive signal or a
picture signal obtained for each frame obtained by
15 merging two fields of an interlaced signal, and the
reference picture number indicates the number of a
reference picture signal on a frame basis.

17. The video decoding method according to
claim 13, wherein the video signal is a picture signal
20 input for each field of an interlaced signal, and the
reference picture signal number indicates the number of
a reference picture signal on a field basis.

18. The video decoding method according to
claim 13, wherein the video signal is a signal
25 including a picture signal obtained for each frame of a
progressive signal, a picture signal obtained for each
frame obtained by merging two fields of an interlaced

signal, and a picture signal obtained for each field of
an interlaced signal, the reference picture signal
number indicates a reference picture signal on a frame
basis when the video signal is the picture signal on a
5 frame basis, and the reference picture signal number
indicates a reference picture signal on a field basis
when the video signal is the picture signal on a field
basis.

19. A video encoding apparatus to subject an input
10 video signal to motion compensation predictive encoding
by using a reference picture and a motion vector
between the input video signal and the reference
picture, comprising:

a selector to select one combination, for each
15 block of the input video signal, from a plurality of
combinations each including a predictive parameter and
at least one reference picture number determined in
advance for the reference picture;

a prediction picture signal generator to generate
20 a prediction picture signal in accordance with the
reference picture number and predictive parameter of
the selected combination;

a predictive error signal generator to generate a
predictive error signal representing an error between
25 the input video signal and the prediction picture
signal; and

an encoder to encode the predictive error signal,

information of the motion vector, and index information indicating the selected combination.

20. A video encoding apparatus to subject an input video signal to motion compensation predictive encoding by using a reference picture and a motion vector between the input video signal and the reference picture, comprising:

5 a selector to select one combination, for each block of the input video signal, from a plurality of combinations of predictive parameters prepared in advance;

10 a designator to designate at least one reference picture number set to at least one reference picture;

15 a prediction picture signal generator to generate a prediction picture signal in accordance with a reference picture corresponding to the designated reference picture number and the predictive parameters of the selected combination;

20 a predictive error signal generator to generate a predictive error signal representing an error between the input video signal and the prediction picture signal; and

25 an encoder to encode the predictive error signal, information of the motion vector, the designated reference picture number, and index information indicating the selected combination.

21. A video decoding apparatus comprising:

a decoder to decode encoded data including a predictive error signal representing an error in a prediction picture signal with respect to a video signal, motion vector information, and index

5 information indicating a combination of at least one reference picture number and a predictive parameter;

a prediction picture signal generator to generate a prediction picture signal in accordance with the reference picture number and predictive parameter of
10 the combination indicated by the decoded index information; and

a reproduction video signal generator to generate a reproduction video signal by using the predictive error signal and the prediction picture signal.

15 22. A video decoding apparatus comprising:

a decoder to decode encoded data including a predictive error signal representing an error in a prediction picture signal with respect to a video signal, motion vector information, and index
20 information indicating a combination of a designated reference picture number and a predictive parameter;

a prediction picture signal generator to generate a prediction picture signal in accordance with the decoded reference picture number and the predictive
25 parameter of the combination indicated by the decoded index information; and

a reproduction video signal generator to generate

a reproduction video signal by using the predictive error signal and the prediction picture signal.